Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 and 2 (canceled)

3. (currently amended): A method ~~In a wireless communication system, a method~~ of performing channel estimation, the method comprising:

~~(a)~~ receiving a time domain signal $\underline{r}$;

~~(b)~~ multiplying, element-to-element, the sequences $\underline{m}$ and $\underline{r}$ by a chirp waveform, the chirp waveform being based on the length of ~~the FFT~~ a fast Fourier transform (FFT) and denoting the resulting sequences as $\underline{m}_W$ and $\underline{r}_W$ respectively, where $\underline{m}$ is a midamble sequence; and

~~(c)~~ creating a chirp sequence $\underline{v}$ based on the chirp waveform.

4. (original): The method of claim 3 wherein the chirp waveform is $W^{n^2/2}$ for n=0,1,2,...,P-1 where P = 456 for burst types 1/3 or P = 192 for burst type 2, and $W = e^{-j\frac{2\pi}{P}}$

5. (original): The method of claim 4 wherein the chirp sequence $\underline{v} = W^{-(n-P+1)^2/2}$ for n= 0,1,2,...,2P-2.

Claims 6 and 7 (canceled)

8. (currently amended): A ~~wireless communication system~~ receiver for performing channel estimation, the receiver configured to ~~system comprising~~:

receive ~~(a) means for receiving~~ a time domain signal r;~~(b) means for~~ and multiply ~~multiplying~~, element-to-element, the sequences m and r by a chirp waveform, the chirp waveform being based on the length of ~~the FFT~~ a fast Fourier transform (FFT) and denoting the resulting sequences as m_W and r_W respectively, where m is a midamble sequence; and

create ~~(c) means for creating~~ a chirp sequence v based on the chirp waveform.

9. (currently amended): The receiver ~~system~~ of claim 8 wherein the chirp waveform is $W^{n^2/2}$ for n=0,1,2,...,P-1 where P = 456 for burst types 1/3 or P = 192 for burst type 2, and $W = e^{-j\frac{2\pi}{P}}$.

10. (currently amended): The receiver ~~system~~ of claim 9 wherein the chirp sequence $v = W^{-(n-P+1)^2/2}$ for n=0,1,2,...,2P-2.

Claims 11 and 12 (canceled)

13. (currently amended): A wireless transmit/receive unit (WTRU) for performing channel estimation, the WTRU configured to ~~comprising~~:

receive ~~(a) means for receiving~~ a time domain signal $\underline{r}$;~~(b) means for~~ and multiply ~~multiplying~~, element-to-element, the sequences $\underline{m}$ and $\underline{r}$ by a chirp waveform, the chirp waveform being based on the length of ~~the FFT~~ a fast Fourier transform (FFT) and denote ~~denoting~~ the resulting sequences as $\underline{m}_W$ and $\underline{r}_W$ respectively, where $\underline{m}$ is a midamble sequence; and

create ~~(c) means for creating~~ a chirp sequence $\underline{v}$ based on the chirp waveform.

14. (original): The WTRU of claim 13 wherein the chirp waveform is $W^{n^2/2}$ for n=0,1,2,...,P-1 where P = 456 for burst types 1/3 or P = 192 for burst type 2, and $W = e^{-j\frac{2\pi}{P}}$.

15. (original): The WTRU of claim 14 wherein the chirp sequence $\underline{v} = W^{-(n-P+1)^2/2}$ for n=0,1,2,...,2P-2.

Claims 16 and 17 (canceled)

18. (currently amended): A base station (BS) for performing channel estimation, the BS configured to ~~comprising~~:

receive ~~(a) means for receiving~~ a time domain signal $\underline{r}$;~~(b) means for~~ and multiply ~~multiplying~~, element-to-element, the sequences $\underline{m}$ and $\underline{r}$ by a chirp waveform, the chirp waveform being based on the length of ~~the FFT~~ a fast Fourier transform (FFT) and denote ~~denoting~~ the resulting sequences as $\underline{m}_W$ and $\underline{r}_W$ respectively, where $\underline{m}$ is a midamble sequence; and

create ~~(c) means for creating~~ a chirp sequence $\underline{v}$ based on the chirp waveform.

19. (original): The BS of claim 18 wherein the chirp waveform is $W^{n^2/2}$ for n = 0, 1, 2,...,P-1 where P = 456 for burst types 1/3 or P = 192 for burst type 2, and $W = e^{-j\frac{2\pi}{P}}$.

20. (original): The BS of claim 19 wherein the chirp sequence $\underline{v} = W^{-(n-P+1)^2/2}$ for n = 0, 1, 2, ...,2P-2.

21. (currently amended): A method ~~In a wireless communication system, a method~~ for performing channel estimation, the method comprising:

~~(a)~~ receiving a time domain signal $\underline{r}$;

~~(b)~~ expressing $\underline{r} = \underline{m} \otimes \underline{h}$ in the frequency domain, resulting in an output signal $\underline{R} = \underline{M} \cdot \underline{H}$, where $\underline{m}$ is a midamble sequence, $\underline{h}$ is a channel impulse response, $\otimes$ is a circular convolution operator, $\underline{R}$ is the fast Fourier transform (FFT) of time domain signal $\underline{r}$, $\underline{M}$ is the FFT of midamble sequence $\underline{m}$, and $\underline{H}$ is the FFT of channel impulse response $\underline{h}$, and $\underline{R} = F(\underline{r})$, $\underline{M} = F(\underline{m})$ and $\underline{H} = F(\underline{h})$ where F( ) is defined as the operator of forward or inverse FFT;

~~(c)~~ calculating $\underline{H}$ is calculated by dividing $\underline{R}$ by $\underline{M}$, where $\underline{R}/\underline{M}$ is the element-to-element division of the corresponding two FFT sequences; and

~~(d)~~ estimating the impulse response by inverse FFT of $\underline{H}$ by calculating $\underline{h} = F^{-1}(\underline{H})$ where $F^{-1}()$ is defined as the operator of forward or inverse FFT and $\underline{h} = F^{-1}(F(\underline{r})/F(\underline{m}))$ and $F(\underline{r})/F(\underline{m})$ denotes the element-to-element division of FFT sequences $F(\underline{r})$ and $F(\underline{m})$.

22. (original): The method of claim 21 wherein the forward or inverse

FFT are exchangeable in the following form: $F^{-1}(\underline{x}) = \frac{1}{P}(F(\underline{x}^*))^*$, wherein P is the length of FFT.

Claims 23 and 24 (canceled)

25. (original): The method of claim 21 wherein the FFT is extended to a proper length L to process a plurality of different burst types by using a chirp transform algorithm (CTA) to compute $F(\underline{r})$ and $F(\underline{m})$.

Claims 26-30 (canceled)

31. (new): A receiver configured to perform the method of claim 21.

32. (new): A wireless transmit/receive unit (WTRU) configured to perform the method of claim 21.

33. (new): A base station configured to perform the method of claim 21.